

STAT

DEC. 1951

CLASSIFICATION RESTRICTED  
SECURITY INFORMATION  
CENTRAL INTELLIGENCE AGENCY  
INFORMATION FROM  
FOREIGN DOCUMENTS OR RADIO BROADCASTS

REPORT

CD NO.

COUNTRY Hungary  
SUBJECT Economic - Metallurgy, industry  
HOW PUBLISHED Monthly periodical  
WHERE PUBLISHED Budapest  
DATE PUBLISHED Jul, Sep 1951  
LANGUAGE Hungarian

DATE OF INFORMATION 1951

DATE DIST. 20 Feb 1952

NO. OF PAGES 2

SUPPLEMENT TO REPORT NO.

THIS DOCUMENT CONTAINS INFORMATION AFFECTING THE NATIONAL DEFENSE OF THE UNITED STATES WITHIN THE MEANING OF ESPIONAGE ACT NO. 18, U. S. C., 51 AND 52, AS AMENDED. ITS TRANSMISSION OR THE REVELATION OF ITS CONTENTS IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED BY LAW. REPRODUCTION OF THIS FORM IS PROHIBITED.

THIS IS UNEVALUATED INFORMATION

SOURCE Termeszt es Technika.

ANALYSIS AND UTILIZATION  
OF BY-PRODUCTS IN HUNGARIAN ALUMINUM INDUSTRY

NEW METHODS OF ANALYZING ALUMINUM BY-PRODUCTS

Termeszt es Technika  
Vol CX, No 7, Jul 1951

The electrolytic determination of sodium in by-products and waste products is one of several new money and time-saving methods which have been developed in the aluminum industry. Recovery of the comparatively expensive sodium is important. The processes used to determine sodium in solid residues formerly required 24-36 hours, and frequently the tests were completed too late to prevent excessive loss of sodium hydroxide in the production process. The new electrolytic process takes one hour. The test consists of heating sodium-containing residues in water and electrolysis for 20-30 minutes in a cellophane-bottomed glass beaker of water containing a nickel cathode. All the sodium collects in the lower part of the beaker as sodium hydroxide, where it is easily determined by titration.

Fluorine, which is present in Hungarian bauxite, hinders precipitation of other impurities. Quantitative determination of fluorine is performed by forming a compound of fluorine, silicon, and hydrogen, which is distilled off and titrated with thorium nitrate. Research in connection with this method permitted great advancement in research on the recovery of fluorine from bauxite.

Small amounts of organic matter in bauxite cloud the aluminate solution and hinder removal of alumina and precipitation of impurities. Determination of the carbon content, or carbon number of bauxite, is an important aid in the evaluation of bauxite ores and intermediary products of alumina plants. Previous methods of determining the carbon content of solids were very complex and

- 1 -

RESTRICTED

CLASSIFICATION RESTRICTED

STATE	<input checked="" type="checkbox"/> NAVY	<input checked="" type="checkbox"/> NSRB																	
ARMY	<input checked="" type="checkbox"/> AIR	<input checked="" type="checkbox"/> FBI																	

STAT

RESTRICTED

RESTRICTED

inaccurate. The new method of determining the carbon number consists of oxidizing the carbon with aqueous sulfuric and chromic acids, washing out the carbon dioxide with air, and collecting it in sodium hydroxide, which is accurately titrated.

#### PROCESSING BAUXITE IMPURITIES

Termeszt es Technika  
Vol CX, No 9, Sep 1951

Two years of intensive research at the Metal Industry Research Institute have resulted in a fuller exploitation of formerly discarded "red mud," a by-product consisting of impurities of the Bayer process of refining bauxite to alumina. After the purified aluminum oxide is removed, the remaining mixture of impurities contains 40-60 percent red ferric oxide, 10-20 percent alumina, 5-8 percent silicic acid, 5-8 percent titanium dioxide, 5-10 percent sodium hydroxide, 0.1 percent chromium, and small amounts of other elements, the recovery of which is impractical. Relative value indexes of these substances are: titanium dioxide 6, sodium hydroxide 1.5, ferric oxide 1, and alumina 1. Thus, 100,000 tons of red mud contain 15,000 tons of alumina, 50,000 tons ferric oxide, 6,000 tons of valuable titanium dioxide, and 4,000 tons of sodium hydroxide, with a total value of 200 million forints.

Although the economic exploitation of red mud has not been satisfactorily solved as yet, the following method has been adopted as the most feasible: the mixture is subjected to heat in a basic solution, permitting 70 percent of the aluminum oxide and sodium hydroxide to be washed out and recovered in a form which can be added directly to the original process of aluminum production, and leaving an ore which may be smelted for iron. The glassy slag residue of the smelting contains a high concentration of titanium dioxide, from which 80-85 percent of the titanium may be recovered easily in a metallic state.

Another substance recovered from bauxite impurities is 50 percent more effective in removing sulfur from natural gas than the substance formerly imported for this purpose. The further development of this process may also yield a practical method for the recovery of chromium from bauxite.

- E N D -

- 2 -

RESTRICTED

RESTRICTED